

Application No. 09/630,258

Filed: August 1, 2000

Group Art Unit: 2124

## AMENDMENT TO THE CLAIMS

Sub B1  
1. (Currently Amended) A method for computing an FFTfast Fourier transform, the method comprising:

(a) receiving a plurality of time-ordered first data values, said first data values having a total of N-data points;

(b) sequentially storing in a first memory each of said plurality of time-ordered first data values in the time-order;

(c) providing in a second memory a plurality of twiddle factors stored in sequential locations in a bit reversed order;

(d) reading R input butterfly data values of said plurality of first data values where each of said R butterfly data values are separated by N/R first data values in said plurality of first data values;

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(e) performing a radix R butterfly calculation on said R butterfly input data;

(f) providing R butterfly output data values;

(g) sequentially storing said R butterfly output data values in a third memory in the order calculated;

(h) performing said steps (c) - (g) N/R x 2 times.

2. (Currently Amended) The method as in claim 1 further comprising the steps of:

sequentially replacing said plurality of first data values in said first memory with said plurality of sequentially stored data in said ~~second~~ third memory location;

repeating steps (c) - (h) a total of  $\log_2(n)$  times.

3. (Original) The method as in claim 1, wherein R=2.

4. (Original) The method as in claim 1, wherein said R=4.

Application No. 09/630,258

Filed: August 1, 2000

Group Art Unit: 2124

5. (Currently Amended) An apparatus for calculating an FFTfast Fourier transform, the apparatus comprising:

a first memory for storing a plurality of time-ordered N input data values, said plurality of N input data values being stored sequentially in the a time-ordered manner;

a second memory for storing a plurality of twiddle factor values in a bit-reversed order;

a third memory for sequentially storing a plurality of output data values in said order calculated; and

a radix R FFTfast Fourier transform -calculator coupled to said first, second, and third memories, said radix R FFT-fast Fourier transform being operative to receive from said first memory, R input data values, each of the R input data values being separated by N/R input data values, said radix R FFT calculator further being operative to receive at least one twiddle factor value from said second memory, and said radix R FFT calculator further being operative to calculate R output data values and to write said R output data values sequentially into said third memory in the order said R output data values are calculated.

6. (Original) The apparatus of claim 5 wherein R equals 2.

7. (Original) The apparatus of claim 5 wherein R equals 4.

8. (Currently Amended) A DSP-digital signal processing apparatus for performing an FFT-fast Fourier transform calculation comprising:

a digital signal processor DSP-operative to receive a plurality of time-ordered first data values, said first data values having a total of N-data points;

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said digital signal processor DSP operative to sequentially store in a first memory each of said plurality of first data values in the time-order;

said digital signal processor DSP operative to provide in a second memory a plurality of twiddle factors stored in sequential locations in a bit reversed order;

said digital signal processor DSP operative to read R input butterfly data values of said plurality of first data values where each of said R butterfly data values are separated by N/R data points in said plurality of first data values;

said digital signal processor DSP operative to perform a radix R butterfly calculation on said R butterfly input data;

said digital signal processor DSP operative to provide R butterfly output data values; and

said digital signal processor DSP operative to sequentially store said R butterfly output data values in a third memory in the order said R butterfly output data values are calculated.